

DETAILED ACTION

Election/Restrictions

The restriction requirement of claims 29-32 is withdrawn in view of Applicant's amendments.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 9, 10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (Jap. Pat. No. 58152737).

Regarding claim 1, Takahashi discloses a document feeder mechanism, comprising: one or more drive rollers (3-10); one or more belts (11,12) configured to tighten around the drive rollers, wherein at least one of the drive rollers is configured to drive the one or more belts; a single idle roller (13); and an elastic member (18,19) attached at one end to the idle roller, wherein the elastic member is configured to exert a force that presses the idle roller against the one or more belts, and wherein the drive rollers, the idle roller, and the one or more belts are further configured to: move a document from a feed-in path to a feed-out path, wherein a direction of the feed-in path and a direction of the feed-out path are both substantially parallel to each other and also parallel to a direction of the force exerted by the elastic member on the idle roller; and receive the document from the feed-in path, feed the document in between the one or

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more belts and only the single idle roller so that the document wraps substantially 180 degrees around only the single idle roller, and output the document from the single idle roller directly to the feed-out path. Takahashi does not explicitly disclose that the elastic member is attached at the other end to a body structure retaining the sheet feed mechanism. However, this arrangement is suggested by fig. 2 of Takahashi and it would have been obvious to one of ordinary skill in the art at the time of the invention to attach the elastic member to a body structure retaining the sheet feed mechanism, in order to achieve a simple, compact apparatus.

Regarding claim 2, Takahashi discloses the document feeder mechanism of claim 1, wherein: a first one of the drive rollers (9) is spaced above the idle roller (13) and a second one of the drive rollers (8) is spaced below the idle roller and directly underneath the first one of the drive rollers; an upper portion of the one or more belts is suspended by the first one of the drive rollers vertically up against a back end of the idle roller and vertically above a top end of the idle roller; and a lower portion of the one or more belts is suspended by the second one of the drive rollers vertically up against the back end of the idle roller and vertically below a bottom end of the idle roller.

Regarding claim 3, Takahashi discloses the document feeder mechanism of claim 2, wherein: a center rotation axis of the first one of the drive rollers (9) and a center rotation axis of the second one of the drive rollers (8) are both positioned behind a front end of the idle roller (13), wherein the front end of the idle roller is configured to receive the document from the feed-in path and output the document to the feed-out path; and the center rotation axis of the first one of the drive rollers and the center

rotation axis of the second one of the drive rollers are both positioned behind a center rotation axis of the idle roller.

Regarding claim 9, Takahashi discloses the document feeder mechanism of claim 1, wherein the one or more drive rollers comprise one or more axles fixed to the body structure. Takahashi lacks the explicit disclosure of an apparatus wherein the one or more drive rollers include one or more axles fixed to the body. However, it was well-known in the art at the time of the invention to use drive rollers with one or more axles fixed to a body. It would have been obvious to one of ordinary skill in the art at the time of the invention to fix the drive rollers of Takahashi to a body, in order to keep the rollers in place while allowing them to rotate.

Regarding claim 10, Takahashi discloses the document feeder mechanism of claim 1, wherein the drive rollers comprise only three drive rollers (3,8,7) arranged in a triangular formation.

Regarding claim 12, Takahashi discloses the document feeder mechanism of claim 1, wherein the document comprises a sheet of paper (21).

Regarding claim 13, Takahashi discloses the document feeder mechanism of claim 1, further comprising a contact between the one or more belts and the idle roller, wherein the contact comprises a face-type contact, and wherein a location of the face-type contact between the idle roller and the one or more belts is substantially perpendicular to the direction of the feed-in path and perpendicular to the direction of the feed-out path. See Takahashi, fig. 2.

Regarding claim 14, Takahashi discloses the document feeder mechanism of claim 13. Takahashi does not explicitly disclose that a surface contact friction between the one or more belts and the document is greater than the friction between the idle roller and the document. However, forming the rollers and the belt out of rubber was well-known in the art at the time of the invention. Using documents that are glossy on only one side was well-known in the art at the time of the invention. Using rubber belts and rollers with similar coefficients of friction would have been obvious to one of ordinary skill in the art at the time of the invention for their durability and friction characteristics. Feeding a document that is glossy on the side contacting the roller would have been obvious at the time of the invention in order to feed photo paper. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a system wherein the surface contact friction between the one or more belts and the document is greater than the friction between the idle roller and the document, in order to provide durability and use the apparatus with photo paper.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Enders (US 6,481,710).

Re claim 5, Takahashi discloses everything except that a third one of the drive rollers is co-linearly aligned with the direction of the force exerted on the idle roller. Enders teaches an arrangement wherein a drive roller 10 is co-linearly aligned with the direction of the force exerted on the idle roller, in order to provide tension on the belt. See Enders, fig. 2, and par. 24. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an arrangement wherein a

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drive roller 10 is co-linearly aligned with the direction of the force exerted on the idle roller, in the apparatus of Takahashi, as taught by Enders, in order to provide tension on the belt.

Re claim 6, the apparatus of Takahashi as modified by Enders comprises the document feeder mechanism of claim 5, wherein the feed-in path is substantially horizontally aligned between the first one of the drive rollers and the idle roller and the feed-out path is substantially horizontally aligned between the second one of the drive rollers and the idle roller. See Takahashi, fig. 2.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Munenaka (US 6,330,404).

Re claim 11, Takahashi discloses everything except that the spring is configured to push out from the body structure against the idle roller. Munenaka teaches the use of a spring 13a that is configured to push out from the body structure against the idle roller 13, in order to provide a predetermined amount of force on the roller. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use a spring that is configured to push out from the body against the idle roller in the apparatus of Takahashi, as taught by Munenaka, in order to provide a predetermined amount of force on the roller.

Claims 15, 17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Takahashi.

Re claims 15 and 20, Applicant discloses that the prior art discloses an apparatus comprising: a feed-in tray; a feed-out tray located directly underneath the feed-in tray.; a feed-in roller configured to feed the document from the feed-in tray in the direction of the feed-in path, wherein the feed-in roller is disposed adjacent a first end of one side of the transmission mechanism; and a feed-out roller configured to feed out the document from the idle roller and the one or more belts in the direction of the feed-out path toward the feed-out tray, wherein the feed-out roller is disposed adjacent a second end of the one side of the transmission mechanism. See fig. 1 of application. Takahashi discloses the document feeder of claim 1, in order to convey paper with improved conveying properties. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to add the document feeder of Takahashi to the apparatus disclosed by applicant as being in the prior art, in order to convey paper with improved conveying properties.

Regarding claim 17, Applicant's admitted prior art as modified by Takahashi comprises a sheet feeder system for a scanner having a body, comprising: a feed-in roller positioned inside the body; a feed-out roller positioned inside the body; and a transmission mechanism positioned inside the body having an upstream end positioned adjacent to the feed-in roller and a downstream end positioned adjacent to the feed-out roller, wherein the transmission mechanism comprises: drive rollers (3-10); one or more belts (11, 12) configured to tighten around the drive rollers, wherein at least one of the drive rollers drives the one or more belts; an idle roller (13); and an elastic member (18, 19) attached at one end to the idle roller and attached at the other end to the body,

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wherein the elastic member is configured to exert a force via the idle roller on the one or more belts, and wherein: a first one of the drive rollers (7) is spaced above the idle roller and a second one of the drive rollers (3) is spaced below the idle roller; an upper portion of the one or more belts is vertically suspended up against a back end of the idle roller and vertically suspended above a top end of the idle roller by the first one of the drive rollers; and a lower portion of the one or more belts is vertically suspended up against the back end of the idle roller and vertically suspended below a bottom end of the idle roller by the second one of the drive rollers.

Regarding claim 19, Applicant's admitted prior art as modified by Takahashi comprises the sheet feeder system of claim 17, wherein movement of the one or more belts in combination with the force exerted by the idle roller on the one or more belts is configured to wrap paper approximately 180 degrees around only the single idle roller.

Regarding claim 21, Applicant's admitted prior art as modified by Takahashi comprises the transmission mechanism of claim 17, further comprising a scan module positioned in between the transmission mechanism and the feed-out roller and configured to scan paper output from the transmission mechanism after the paper has moved 180 degrees around the idle roller.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of DeBarber (US 5,740,728).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of DeBarber (US 5,740,728). Re claim 16, Takahashi discloses the

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document feeder mechanism of claim 1. Takahashi does not explicitly disclose that the elastic member is configured to move the idle roller towards a substantially single tangential contact location on the one or more belts in a substantially tangent direction that is substantially perpendicular to the direction of force exerted by the elastic member against the idle roller. DeBarber teaches the use of a system wherein the elastic member 252 is configured to move the idle roller 234 towards a substantially single tangential contact location on the one or more belts in a substantially tangent direction that is substantially perpendicular to the direction of force exerted by the elastic member against the idle roller, in order to achieve a suitable mounting arrangement. Col. 4, lines 12-16. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a system wherein the elastic member is configured to move the idle roller towards a substantially single tangential contact location on the one or more belts in a substantially tangent direction that is substantially perpendicular to the direction of force exerted by the elastic member against the idle roller, in the apparatus of Takahashi, as taught by DeBarber, in order to achieve a suitable mounting arrangement.

Allowable Subject Matter

Claims 8 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 29-32 are allowed.

Response to Arguments

Applicant's arguments filed 21 May 2008 have been fully considered but they are not persuasive.

Applicant argues that “[t]he paper 21 in Takashi is not fed in-between an elastic member and only one single idle roller as recited in claim 1. Takashi feeds paper 21 between belt 11,12 and two pulleys 13,15 and 14,16. Paper 21 in Takashi is also not wrapped 180 degrees around only a single idle roller as also recited in claim 1. The paper 21 in Takashi is first transported 90 degrees by the first roller 13, 15 and then transported another 45 degrees by the second roller 14,16 (FIG. 2).” Remarks, p. 10. The examiner respectfully disagrees. There is a single idle roller (13) in Takahashi. Further, the paper wraps 180 degrees around the roller as it travels through the path.

Applicant argues that “Takahashi shows pulleys 7,10 and 3,4. However, there is no lower drive roller located directly underneath an upper drive roller as recited in claim 2. The pulley 7,10 Takahashi is located behind pulley 3,4. Takahashi also does not teach drive rollers that suspend a belt against an idle roller and that are also located behind a front end of an idle roller as recited in claim 3. Both pulley 7,10 and pulley 3,4 are located in front of both idle rollers. The center rotation axis for both pulleys 7,10 and 3,4 are also not located in back of the center rotation axis of an idle roller as also recited in claim 3. The center rotation axis for both pulleys 7,10 and 3,4 are located in front of the rotation axis of idle roller 13,15 and idle roller 14,16.” The examiner respectfully disagrees. Roller 9 is located directly below roller 8.

Applicant argues that claim 16 is patentable over Takahashi in view of DeBarber because “the contact location between the roller 234 and the belt 210 in Debarber is

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parallel to the direction of travel of the letter 20 and not perpendicular to the direction of the feed-in path and perpendicular to the direction of the feed-out path as recited in claim 16.” Remarks, p. 13. The examiner respectfully disagrees. The contact location is perpendicular – it can be seen in figure 2, and the spring would press the roller to have a perpendicular contact location.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy Severson whose telephone number is (571)272-2209. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Mackey, can be reached on 571-272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeremy Severson/
Examiner, Art Unit 3653

/Patrick H. Mackey/
Supervisory Patent Examiner, Art
Unit 3653